



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

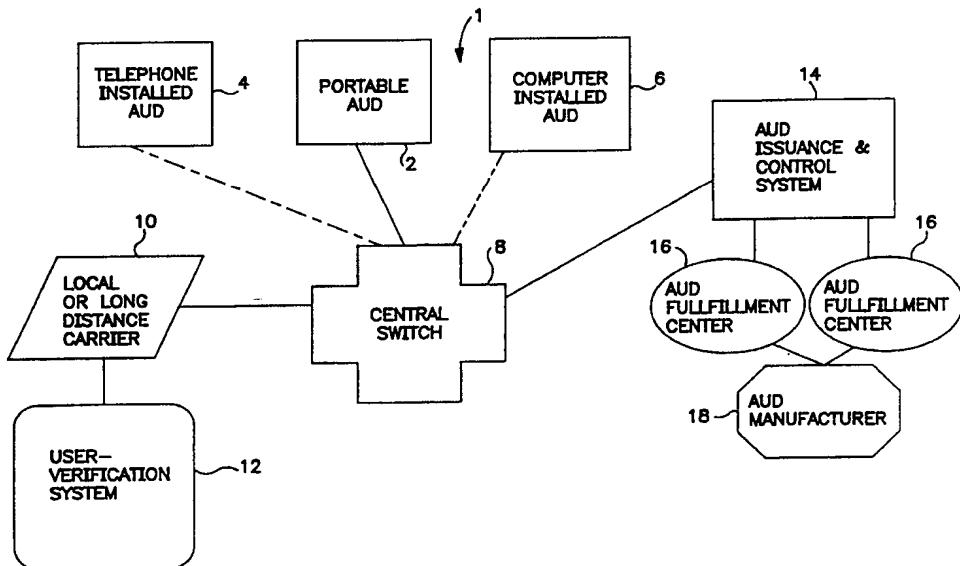
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(54) Title: METHOD AND SYSTEM FOR THE SECURE COMMUNICATION OF DATA

(57) Abstract

A user-authentication system includes an AUD for transmission of dtmf tones to a user-verification system over a telephone network. In a memory module of the AUD, voice and access data are stored for subsequent transmission to a user-verification system. A compensating system associated with the AUD generates two low frequency and two high frequency tones, and selectively amplifies them to varying levels to compensate for transmission efficiencies associated with conventional telephone microphones. The user-verification system further detects unauthorized users, and includes memory storing data relating to access numbers used, and a user's voice, a transmitter transmitting a first signal requesting voice information and a second signal relating to time, a receiver receiving the tones and the signal relating to time, and an analyzer device determining whether the access number used to reach the user-verification system is identical to previous access numbers used, whether the signal relating to time corresponds to the time of user-transmission of the tones, and whether the user's voice corresponds to the stored data. A system for routing a tone signal from the AUD to an intended user-verification system includes a central switch receiving tones from the AUD including an initial alert tone followed by data tones representing voice-related and destination-related data. The central switch includes an analyzer device analyzing the tones, and a routing device routing the tones to a user-verification system in response to the alert tone. A system for performing amplitude equalization associated with each of the user-verification systems has a receiver receiving tones relating to a user's voice, an amplifier generating an amplification factor for each of the tones, and a correcting device using the amplification factors to correct subsequent voice tones.



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INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 97/02907

A. CLASSIFICATION OF SUBJECT MATTER

IPC 6 H04M3/38 H04Q1/453 H04M1/274 G07F7/10 H04M17/02

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 H04M H04Q G07F G10L G07C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 96 04741 A (MARK ANDREW R) 15 February 1996 cited in the application see page 24, line 30 - page 27, line 20 see page 35, line 15 - page 40, line 23 ----	1-10, 52, 53
P, X	WO 96 10880 A (LABATON ISAAC J ;KELLY MICHAEL K (US)) 11 April 1996 see page 6, line 12 - line 31 ----	1-10, 52, 53
X	DE 44 11 780 A (REDMANN WOLFGANG A DR RER NAT) 12 October 1995 see abstract ----	11, 12
X	US 4 679 236 A (DAVIES RICHARD E) 7 July 1987 see column 1, line 67 - column 2, line 6 see column 6, line 27 - line 29 ----	11 -/-

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

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- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
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- "&" document member of the same patent family

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Date of the actual completion of the international search

12 June 1998

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INTERNATIONAL SEARCH REPORT

International Application No

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0 298 621 A (OLIVETTI & CO SPA) 11 January 1989 see column 6, line 27 - line 52	13,16,17
X	see column 2, line 30 - column 3, line 58 see column 5, line 28 - column 6, line 45 ---	23,24, 42-47
A	US 3 689 702 A (MCCAY THOMAS E) 5 September 1972 see column 1, line 53 - column 2, line 22 ---	18,21
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E	WO 97 12471 A (FINTEL S A) 3 April 1997 see page 7, line 16 - page 8, line 11 ---	23,24
X	WO 95 08821 A (VCS IND INC) 30 March 1995 see page 12, line 28 - page 13, line 25 see page 19, line 18 - line 32 ---	25, 32-35, 48-51
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Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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INTERNATIONAL SEARCH REPORTInternational Application No
PCT/US 97/02907**C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT**

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 181 238 A (MEDAMANA JOHN B ET AL) 19 January 1993 -----	
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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 97/02907

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:

3. Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.

2. As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:

4. No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- The additional search fees were accompanied by the applicant's protest.
- No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

International Application No. PCT/US 97/02907

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

1. Claims: 1-10, 52-53

Device and method for generating a series of tone signal pairs.

2. Claims: 11-17

User verification system comprising an analyser determining if received user signal characteristics include at least one of the signals previously transmitted to the user.

3. Claims: 18-22

Telephone communication system comprising a user activatable tone generator, transmitting a plurality of tones, comprising an initial alert tone followed by data tones.

4. Claims: 23-24, 42-47

System for performing signal normalization over a channel.

5. Claims: 25-28, 32-35, 48-51

Method of using a user authentication system to perform password sufficiency screening, prompting a user to state a passphrase.

6. Claims: 29-31

Method for performing user verification wherein a user is authorized in response to a match between a plurality of tone signals transmitted by the user (and representing telephone numbers) and previously stored tone signals.

7. Claims: 36-41, 54 ,55

Method for performing user verification, adjusting a stringency requirement.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 97/02907

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